COMMON SENSE IN ENDOCRINOLOGY*

Ludwig Kast Award †

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I AM very honored to have been chosen for the Ludwig Kast Award of 1952 and am happy to be here.

First, let me apologize if this talk gives evidence of having been written during a presidential campaign.

I did not *choose* to give this talk; I was drafted; I have no secret fund. Furthermore, the choice of the title, "Common Sense in Endocrinology," was not of my doing. Indeed, it may turn out to have been my undoing. Be that all as it may, sense of some kind, common or otherwise, is occasionally useful in endocrinology and so common sense is perhaps as worthy as anything of a few minutes' discussion. The tricky part of the problem is to prevent the degradation of sense into nonsense.

But we must make a start!

What is common sense? Is it average sense? Is it the degree of sense achieved by an automatic calculating machine? No, none of these. How is it related to intelligence?

Let's make a graph. If one plots intelligence against common sense and uses the right scales, the right coordinates and the right paper (log., log., if mathematically inclined) and keeps an eye on lambda, one may obtain with very little cheating three points through which anyone with common sense would draw a straight line (see Fig. 1). However, somebody with even more imagination might draw a much more interesting curve through the same three points (see Fig. 2).

This second curve reveals several interesting things of which time permits the discussion of only one. Thus, whereas in the midzone of intelligence common sense increases with increasing intelligence, in the higher reaches of intelligence common sense is left far behind.

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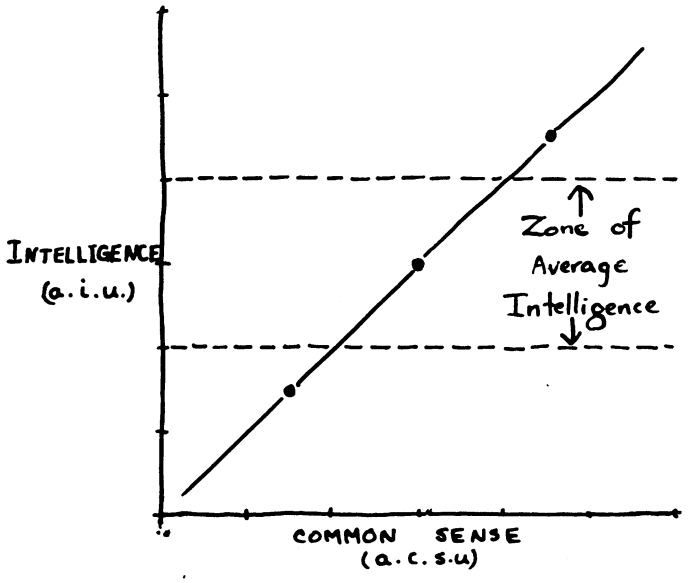
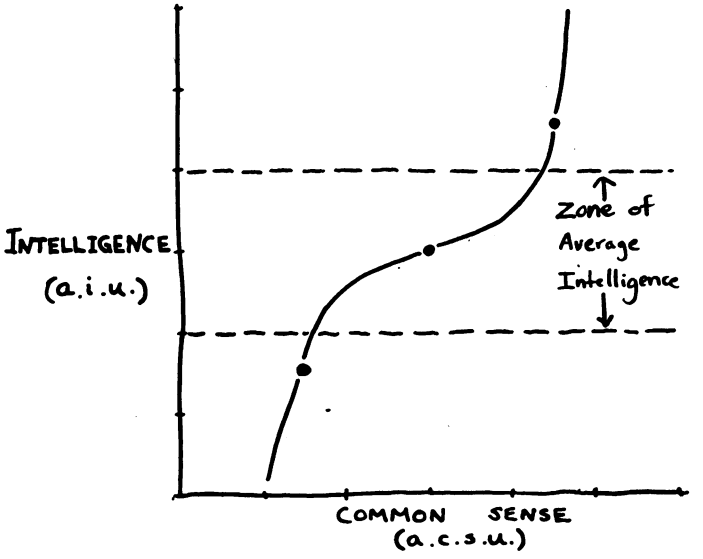
† In honor of Dr. Ludwig Kast who first suggested the Annual Graduate Fortnight.

Fig. 1. Common Sense vs. Intelligence



a.c.s.u. = Albright common sense units
a.i.u. = Albright intelligence units

Fig. 2. Common Sense vs. Intelligence



Alternative to Figure 1.*

* Figures 1 and 2 are not original with the author to whom they were shown by Dr. Anne P. Forbes.

But I am off on a tangent. I won't try to define common sense further; you all know what it means. I won't deny its importance. It is almost axiomatic—I might almost say it is common sense that common sense has its place in all branches of medicine. I would emphasize, however, that it has its shortcomings. One cannot rely on common sense alone; one's deduction, one's theory, one's handling of a situation can be based on the highest order of common sense and still be entirely wrong.

First let me dispose of the case where poor sense masquerades under the guise of common sense.

For example, take metropathia hemorrhagica. This is clearly an endocrine disorder, associated with a continuous estrin production coupled with the absence of an intermittent progestin production.[1] It is associated with hyperplasia of the endometrium, focal areas of which break down and cause continuous uterine bleeding. The primary difficulty is that the surface of the endometrium as a whole is not being cast off every twenty-eight days. These patients bleed but do not menstruate; they have a "continuous-hormonal-amenorrhea," as it were, in spite of the fact that they may be flowing constantly. They do respond to medical treatment, but this sometimes takes a little arranging and a little patience. What too often happens is that the patient gets started on medical treatment; this is not immediately successful; one course of injections follows another; first this specialist and then that is consulted; the flowing keeps on; the patient and her mother begin to get discouraged; etc., etc. In comes the man of action,—this time in the guise of a surgeon, engulfed in an aura of apparent common sense! "Why continue dilly-dallying around? Why not have the uterus out and get rid of the trouble once and for all? What are we waiting for?" So be it! Out goes the uterus and often the ovaries! But, alas! what seemed to be common sense at the time, reviewed after thirty childless years, will turn out to have been pseudo-common sense of the first water. Unfortunately, the surgeon will have long since lost track of the case.

Secondly, let me cite an example where common sense was not lacking in quantity or quality—at least I hope not—but where, nonetheless, the deductions arrived at may have been erroneous. It is possible that the straight line graph was used where the S-curve was called for. I have in mind studies on the mode of action of the hormone of my

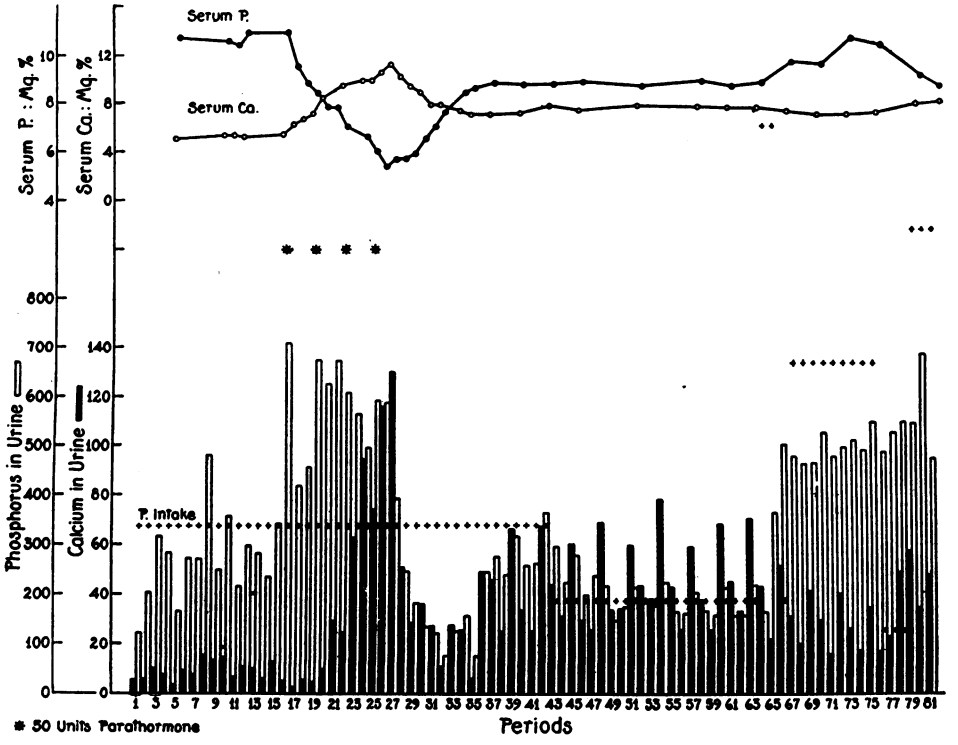


Fig. 3—Effect of parathyroid hormone on serum calcium and phosphorus levels and urinary calcium and phosphorus excretions. (Albright and Ellsworth,[2] in *J. Clin. Investigation* 7:183-201, 1929. Reprinted by permission).

old friends, the parathyroid glands.

Calcium phosphate occurs in the body in a solid state (bone) and in solution (body fluid). With an increase of parathyroid hormone there is, in body fluids, a rise in the calcium and a fall in the phosphate. One cannot escape the suggestion that some solubility product is controlling the levels of calcium and phosphate.

Then, if one carries out a few experiments suggested by these observations, one ends up with the following four fundamental sequelae of parathyroid hormone administration: 1) hypercalcemia, 2) hypercalcuria, 3) hypophosphatemia, and 4) hyperphosphaturia.[2]

Now, if one were to be cast off on a desert island, one where there were no distracting stimuli, and if one had these four sequelae alone to consider, and if one granted that the four sequelae are interrelated, one could only come out with the following sequence: hyperphospha-

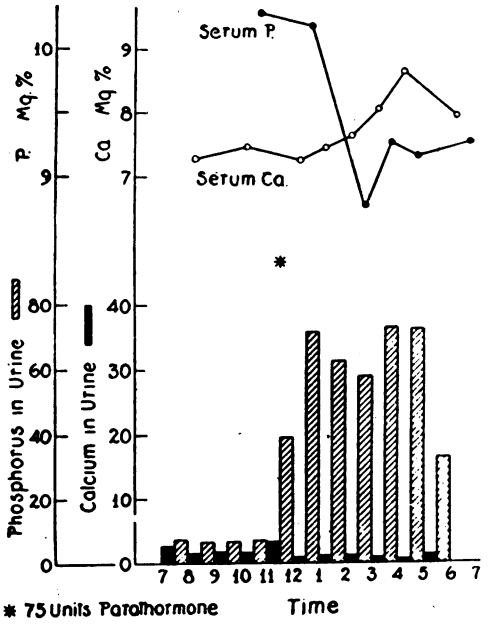


Fig. 4—Data similar to those in Figure 3 except that the periods are one hour instead of eight hours. (Albright and Ellsworth,[2] in *J. Clin. Investigation* 7:183-201, 1929. Reprinted by permission).

turia → hypophosphatemia → hypercalcemia → hypercalcuria. On being rescued from the island, one could design experiments to test the validity of these deductions (see Figs. 3 and 4).

This so far seems an example of where deductions, based on common sense alone, turned out to be valid. But wait! . . . somebody is always taking the joy out of life. It will be noted that the above-mentioned sequence starts with hyperphosphaturia. If that were the first step, the other sequelae should not follow as sequelae at all in the absence of kidneys. An increasing number of investigators are finding all kinds of actions of the hormone on animals with their kidneys out. The author reluctantly has admitted that the old theory might need some revising.[3] This challenge reached its culmination when Barnicot[4] produced bone changes locally in proximity to parathyroid transplants. However, as far as the author is aware, nobody has shown that his pet sequence (v. supra) does not play a part,—albeit not the only part.*

* Pitts[5] thought that he had demonstrated an absence of a phosphorus diuresis following administration of parathyroid extract to dogs. However, he did not start urine collections until fourteen hours after the last dose of parathyroid extract. If the time relationships are the same in dogs as in man one would have anticipated that the phosphorus diuresis would have completely passed by sixteen hours.

So much for the parathyroids!

Thirdly, common sense plays its part in another field of endocrinology—that of lecturing. Though it is intelligence which frames the body of a talk, it is common sense which dictates that one sit down when he has nothing more to say.

REFERENCES

1. Albright, F. Metropathia hemorrhagica. *Maine med. J. 29*:235-38, 1938.
2. Albright, F. and Ellsworth, R. Studies on the physiology of the parathyroid glands; calcium and phosphorus studies on a case of idiopathic hypoparathyroidism, *J. clin. Invest. 7*:183-201, 1929.
3. Ingalls, T. H., Donaldson, G. and Albright, F. Locus of action of the parathyroid hormone; experimental studies with parathyroid extract, of normal and nephrectomized rats, *J. clin. Invest. 22*:603-08, 1943.
4. Barnicot, N. A. The local action of the parathyroid and other tissues on bone in intracerebral grafts, *J. Anat. 82*:233-48, 1948.
5. Jahan, I. and Pitts, R. F. The effect of parathormone on the renal tubular reabsorption of inorganic phosphate (abstract), *Fed. Proc. 7*:61, 1948.